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China Report

AGRICULTURE

No. 191

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Tianjin ZHIWU BAOHU [PLANT PROTECTION] in Chinese No 6, 8 Dec 81 p 22

[Article by Chen Qiying [7115 0366 8755]: "10 Years of Progress in Research on Fusarium Wilt and Verticillium Wilt of Cotton"]

[Text] Fusarium wilt and verticillium wilt of cotton are serious diseases in our nation's cotton production. Historically, the loss of ginned cotton in ordinary years due to these two diseases was over 1.2 million dan. Since the founding of the nation, and especially since 1971 after the coordination group was established, the nation's forces were organized to carry out coordinated research. Over these 10 years, visible achievements have been realized in basic theory and in measures of prevention and control.

Research in the type of pathogen, the physiological type and the pathogenic type: It was discovered that the fusarium fungi of cotton have two different cultures and three physiological types. These physiological types have visible geographic distributions. The bacterial type of verticillium fungi of the 13 major cotton producing provinces (cities) in our nation has been determined to be Verticillium dahliae, Kleb, and it is divided into three pathogenic types. The bacterial strain in Jingyang in Shaanxi Province is a strong toxic strain. These efforts have provided scientific reference for selective breeding of disease resistance and for the rational distribution of disease-resistant varieties.

In recent years, through national coordination, the resistance to fusarium wilt of the sources of 3,710 cotton varieties was determined, and research to determine the resistance to verticillium wilt of 2,424 sources as conducted. The situation of presently available resistance sources in our nation is basically understood. Seeking new resistant sources and qualities of varieties are important topics in breeding disease resistance. This work will continue.

The achievements of breeding disease resistance have been rich. Over the past 10 years, more than 10 disease-resistant varieties have been successfully bred through cooperative efforts and have been recommended for use in production. Their planting area has reached 5.33 million mu, reducing the loss of 1.5-2 million dan of ginned cotton each year. The better varieties are: Shaan 401, Shaan 5245, Chuan 73-27, Lukang No 1, 8010, 8004, Liaomian No 4 and No 86-1. In 1981, the whole nation planted 2.2 million mu of No 86-1, constituting about 41 percent of the planting area of all disease-resistant varieties.

A lot has been done in studying the conditions and patterns of the genesis of fusarium wilt and verticillium wilt of cotton, carrier seeds and sterilization of seeds, hosts of the pathogens, the scope of the hosts, activity patterns in the soil, different biochemical reactions of the host and the pathogens, anatomy of diseased tissues through electronmicroscope observations, mechanism of disease resistance, and pathogenicity and hereditary variations. Such work has enriched the research content in this field.

Comprehensive prevention and control of fusarium wilt and verticillium wilt of cotton is correct and effective as a strategy of prevention and control to assure protection of disease-free areas, to purge scattered diseased areas, to control slightly diseased areas and to reform the severely diseased areas. Based on the foundation of the models of comprehensive prevention and control in Xianyang in Shaanxi, Xinxiang in Henan, Changshou in Jiangsu, and Xiaoshan in Zhejiang, four other comprehensive prevention and control model areas were established in 1981, in northern Henan, Shandong, Hubei and Zhejiang, covering an area of 1.37 million mu.

The annual national academic conference to summarize 10 years of cooperation in studying comprehensive prevention and control of fusarium wilt and verticillium wilt received a total of 126 academic papers and summaries. They will be compiled and published in a "collection of research papers on cotton diseases" as reference for every locality. In the future, the coordination group will continue to organize the nation's scientific research forces in cotton diseases to promote cooperative research in a big way and to contribute to our nation's agricultural modernization.

9296
CSO: 4007/164

BRIEFS

FACTORY MANAGERS, CADRES TRAINED--Beijing, 3 Feb (XINHUA)--More than 1.6 million Chinese factory managers and leading cadres of industrial and communications departments have received technical and management training in the past 3 years, according to the State Economic Commission. In other words, said the commission, 80 percent of the directors and deputy directors of the economic commissions in all provinces, municipalities and autonomous regions and 64 percent of the managers at industrial and communications enterprises at the county level or above have been rotated through training classes or cadres schools. More than 1,400 senior cadres have graduated from a training center sponsored jointly by the State Economic Commission and the All-China Federation of Trade Unions. China plans to train all top industrial and communications managerial staff before 1985 as part of the effort to modernize, the State Economic Commission said. [Text] [OW051025 Beijing XINHUA in English 0704 GMT 3 Feb 82]

CSO: 4020/97

BRIEFS

XIANYOU COUNTY SUGARCANE HARVEST--Xianyou County's 1320,000 [as printed] mu of sugarcane field have turned out some 110,000 dun of sugar. The county's per-mu yield of 1,600 jin of sugar ranks first in the country. In 1981, the party committee of Xianyou allocated 150,000 yuan and assigned 250 agrotechnicians selected from among the peasants to pass on advanced, scientific farming methods to sugarcane growers. [OW141103 Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 9 Feb 82 OW]

CSO: 4007/212

BRIEFS

CANE SUGAR OUTPUT--The 1981 total sugarcane output in Guangdong Province increased by 400 jin per mou over the 1980 figure. Total sugarcane output reached 11 million ton; total cane sugar output 1.3 million ton, a record. [Excerpt] [Beijing RENMIN RIBAO 29 Jan 82 p 1]

4007/219

HEILONGJIANG

BRIEFS

LIVESTOCK OUTPUT--Nenjiang Prefecture, Heilongjiang Province, scored achievements in cattle raising in 1981. According to statistics, by the end of 1981 the prefecture had over 220,000 head of cattle, a 4 percent increase over the 1980 figure. Of these cattle, more than 50,000 head were raised by individual households. [SK090347 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 7 Feb 82]

FARM MECHANIZATION--Keshan County, Heilongjiang Province, has basically mechanized farming work, which has resulted in prosperity. Since 1979, the acreage of farmland cultivated by machines throughout the county has reached 86 percent of its total farming acreage, resulting in a steady increase of grain output. According to statistics, the county increased its per mu yield of grain and soybeans from 169 jin in 1976-1978 to 242 jin in 1979-1981. The volume of marketable grain handed over to the state in 1979-1981 surpassed that in 1976-1978 by 88.4 percent; agricultural income over the same period was 61.3 percent higher. In 1981, per capita income reached 140 yuan, a 64.6 percent increase over the figure of 1976-1978. [SK090347 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 7 Feb 82]

EDIBLE OIL OUTPUT--Through technical renovations, Heilongjiang Province made progress in processing oil-bearing seeds in 1981. According to statistics, grain departments throughout the province processed 470 million jin of minor oil-bearing seeds and produced 110 million jin of edible oil. Both the processed volume and food oil output surpassed the 1980 provincial figures by 1960 percent. [Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 7 Feb 82 SK]

CSO: 4007/303

JILIN

BRIEFS

HUAIDE COUNTY GRAIN OUTPUT--Changchun, 11 Feb (XINHUA)--Huaide County of Jilin Province reaped a bumper harvest of grains in 1981. The total grain output reached more than 1.5 billion jin, increasing by 20 percent over the bumper harvest year of 1980. The county turned in more than 800 million jin of marketable grains to the state. [Beijing XINHUA Domestic Service in Chinese 0151 GMT 11 Feb 82 OW]

CSO: 4007/212

LIAONING CONFERENCE DISCUSSES HOG PRODUCTION

SK101541 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 9 Feb 82

[Excerpts] According to our sources, at a recent conference on developing hog production and improving hog procurement work, the provincial CCP committee and government adopted six political decisions on ways to deal with relations between the regulation by plan and the regulation by market force and solve problems in the new situation in which the peasants have difficulty selling their hogs. They are:

1. Persist in the principle of giving primary importance to regulation by plan and secondary importance to regulation by market force. Hog-raising collectives and individuals must implement the procurement base figures assigned by the provincial authorities and incorporate them into their plans. After fulfilling their assigned purchasing tasks, commune members may keep, slaughter, consume or sell all remaining hogs.

2. Government at all levels must stabilize all established policies concerning assigned purchasing tasks, [word indistinct] prices, rewards, fodder and remuneration for hog manure. The various measures adopted by communes and brigades to encourage hog raising should be carried out. Units which have discarded their policies should be persuaded to restore them. Effective this year, the policy of establishing links between fodder plots and assigned hog-purchasing tasks should be adopted so as to assign hog-purchasing quotas on the basis of allotted fodder plots. Those who fail to fulfill the hog-purchasing tasks will have their allotted fodder plot recalled or the crops harvested from the fodder plots confiscated.

3. We must improve hog purchasing work. Commercial departments should cultivate a political, productive and mass approach toward their business, improve their work style and management and make it easy for the masses to sell their hogs.

4. We must further implement policies and make continued efforts to encourage both collectives and individuals to develop hog production. At present, hog raising by commune members is the primary source for meat supply and farm manure and vigorous efforts should be made to implement the various forms of the responsibility system and improve efficiency.

5. We must improve the management of hog and meat markets.

6. We must step up leadership over hog production.

CSO: 4007/200

SOWING OF LATE AUTUMN CROP FOR 1982 COMPLETED

Chengdu SICHUAN RIBAO in Chinese 10 Dec 81 p 1

[Article: "Relying on Policy, Relying on Science, Strive To Realize a Bumper Harvest of Late Autumn Crops Next Year"]

[Text] The work of sowing the late autumn crops of 1982 in our province has already ended victoriously. Because of further readjustment of crop distribution, the area of food grains has been lessened (mainly a reduction of wheat; the area of peas and broad beans in most places has been increased), and the area of rape has continued to be enlarged. In sowing, the proportion of superior varieties has increased. The base manure is more adequate. The sowing time has been appropriately concentrated, and the quality at most localities is better than last year.

The many forms of agricultural production responsibility system throughout the province have been further stabilized and perfected, greatly mobilizing the enthusiasm of the broad number of commune members and masses to plant the late autumn crop well. The sowing work has been grasped more tightly and concretely, and a better foundation for increased yields of late autumn crop next year has been established. Throughout the province, superior varieties of wheat--mainly mianyang No 11 and fan 6--constitute 75 percent, an increase of more than 5 percent over last year. The area of these varieties reaches over 85 percent in most communes and brigades in the western Sichuan region. In some communes and brigades in the mountain regions in southeastern Sichuan which popularized superior varieties of wheat less in past year, the area of these varieties reaches 65 to 70 percent. Most of the localities have reduced or basically eliminated varieties that easily become diseased and old varieties. The area of cabbage type varieties of rape--mainly chuan you No 6 and xinan 302 varieties--reached about 90 percent, an increase of more than 8 percent over last year. Chengdu, Wenjiang, and Leshan, which are the main rape producing regions, have basically changed to planting superior varieties. The regions of eastern Sichuan have also increased the planting area of superior varieties from 50 percent last year to 70 percent. Throughout the province, the area of cultivating rape seedlings and transplanting has reached 4.56 million mu, an increase of about 600,000 mu over last year. Most communes and brigades in the Wenjiang region have basically realized full seedlings and full transplanting.

In sowing, each locality has suited measures to local circumstances. Each locality aimed at the characteristics of late autumn varieties to determine the sowing period, grasped the seasons and seized the time for sowing. Sowing was generally completed within the concentrated period of some 20 days before and after 7 November. The season was generally earlier than in past years. The amount of application of base manure increased, and in particular, the application of organic fertilizers increased. Some communes and brigades in Neijiang Prefecture applied 10 to 20 percent more organic fertilizers per mu of wheat when in past years. The quality of soil preparation was better than in any year in the past.

To insure the quality of sowing late autumn wheat, each locality commonly emphasized technical training and improved the level of scientific planting. The whole province trained leading cadres at each level, technical personnel and commune member representatives totaling over 3.2 million person-times, and established many information desks and stations on agricultural techniques, and printed and sold over 10 million copies of written information on various agricultural techniques. Many scientific and technical achievements and advanced techniques in planting late autumn crops were further popularized and applied.

At present, the seedlings of most of the late autumn crops are uniform, the growth trend is generally better than in the same period last year. Each locality is grasping field management centered around intertilling and sidedressing to exert efforts to improve the unit yield and to strive for overall bumper harvests of late autumn food grains and oil-bearing crops.

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CSO: 4007/164

PROVINCIAL AGRICULTURAL MACHINERY MEETING REVIEWS SITUATION

Chengdu SICHUAN RIBAO in Chinese 18 Dec 81 p 2

[Article: "Manage and Use Agricultural Machinery Well, Promote Prosperity of the Farm Village Economy; the Provincial Agricultural Machinery Work Conference Asks the Agricultural Machinery Departments at Each Level To Raise Their Spirits, Study the New Problems Under the New Situation, and Start Out from the Actual Situation To Handle Farm Machinery Work Well"]

[Text] The provincial Agricultural Machinery Bureau held a provincial agricultural machinery work conference from 2 to 8 December attended by the chiefs of the agricultural machinery bureaus of each locality, city, prefecture and county. They studied the new situation and the new problems encountered in agricultural machinery work under the new situation and they fundamentally changed the guiding ideology and guidelines. They adapted to the new situation in the farm villages, raised their spirits, started out from the actual situation, carried out agricultural machinery work well, and promoted the economic prosperity of the farm villages.

Under the guidance of the spirit of the Third Plenum of the Chinese Communist Party, our province's farm villages have implemented various forms of the production responsibility system. The situation in the farm villages is very good, and the situation regarding agricultural machinery work is also good. From January to September this year, although fuel was drastically reduced as compared to the same period last year, nevertheless 29.81 million mu-times of irrigation was completed, 24.53 million working mu were tilled by machine, 25.17 million mu of crops were threshed by machine, over 20 billion jin of food grains were processed, 7 million dan of edible oil were processed, 2.25 billion jin of feed were pulverized, and many tasks to prevent and control disease and insect pests, to bake food grains, and to process agricultural sideline products, agricultural production materials, materials for the farmer's life and transport agricultural sideline products were completed. The relatively high level of the past was maintained, and the area tilled by machine increased 9 percent over the same period last year. In particular, in the efforts to resist floods, in rescue operations and in production for self-help, many places could not be reached by motor vehicles, so tractors were actively used. In the course of implementing the agricultural production responsibility system, the number of farm machinery units and the total motor power for farm use increased in our province. In particular, steel tube plows, iron windmills, threshers and similar semimechanized farm machinery tools were welcomed by the farmers, and their use was increased. The facts showed that the saying "by giving double contracts to the family, farm machinery is warehoused" does not coincide with the actual situation. The farm machinery business has a bright future. Comrades engaging in farm machinery work must raise their spirits, work hard, and adapt to the demands of the farmers for farm machinery under the new situation.

The conference pointed out that under the ideological guidance of the "left" in the past, because of blind pursuit of speed in agricultural mechanization, our province's agricultural machinery industry established an overly large setup and the varieties of agricultural machinery were few. Many problems existed in the product structure, the business system and the business management style. These must be readjusted in accordance with the actual situation under the guidelines of the central authority and the provincial committee to implement fundamental changes: we must change "mechanizing" for the sake of mechanization; we must change blind pursuit of speed to starting from the actual situation in everything; we must measure our own strength in doing things; we must talk about economic gain; we must change public management to civilian management; we must hand over the authority of agricultural mechanization to the farmers; we must change management mainly by the communes and the brigades to management mainly by the production teams and joint business management; we must adopt the cosmic view of agriculture and food grains; we must change the product structure; and we must expand the area of service. The key in readjustment is to change agricultural machinery work further, manage well, use the presently available agricultural machinery well, and at the same time, we must organize the scientific and technical forces of agricultural machinery to concentrate on the renewal and replacement of agricultural machinery products, to reform old products, develop new products, conserve fuel, and open up new energy sources. Farm machinery plants must grasp the readjustment of service and the product structure in a key way so as to realize rational distribution. Farm machinery service companies must take revitalization of the flow of commercial farm machinery products as the main goal.

Our province's farm machinery business already has a relatively strong foundation. The farm villages throughout the province already have over 120,000 tractors and 510,000 electric motors and internal combustion engines. The total motorized power for farm use is over 8.9 million horsepower. There are over 1 million accessory farm machinery tools. The total value of fixed assets of agricultural machinery constitutes 28 percent of the total value of fixed agricultural assets of the third level collective economy. There are 700,000 farm machinery personnel of various kinds. This is a very large asset and a very important technical team. They are a strong productive force in the overall development of our province's agricultural production and they are an important material foundation for making the farm village economy prosperous. The conference emphasized that farm machinery work in 1982 must enable achievement of the goals of increasing agricultural production proposed by the provincial committee and the provincial government. First, we must combine efforts to implement the agricultural production responsibility system, to implement well the management responsibility system for using agricultural machinery of the commues and brigades, and to make the system sound and stable. The responsibility system must define the duties clearly: the benefits should be direct and the method should be simple. All responsibility systems that benefit increased agricultural production and increased harvests, mobilize productive enthusiasm, energy conservation, and safety, and protect the machinery can be implemented and the forms must be versatile and varied. Second, the relationship between unification and contracting must be handled well. The production team must distribute the crops well to facilitate the use of agricultural machinery. After contracting the machinery to the person, the production team must strengthen management and control to satisfy the farming needs in a timely way. Third, reorganization of the agricultural machinery stations of communes must be grasped well. The leading groups must be strengthened. The level of business management must be improved. Fourth, preparatory tilling for crops that are sown in the spring and harvested in the fall must be grasped tightly. Machinery which could draw water for irrigation but has been submerged under flood water and damaged and other farm machinery that needs to be repaired must all be repaired before spring tilling next year. Fifth, each county must organize farm machinery and petroleum supply departments to distribute fuel for agriculture rationally, improve the method of fuel supply, popularize measures to conserve fuel, and truly use fuel for agricultural projects that most urgently need fuel. Sixth, we must strengthen the safety, supervision and management of farm machinery, especially tractors, and take forceful measures to reduce the number of accidents to the minimum.

During the conference, the secretary of the provincial committee, Yang Wanxuan [2799 5502 6693], and Deputy Governor Comrade Yang Zhong [2799 6945] spoke.

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CSO: 4007/164

BIREFS

PIG BREEDING--Chengdu, 21 Jan (XINHUA)--Domestic animals are thriving in Sichuan Province which was hit last year by the worst flood since 1949, according to a spokesman of the provincial animal husbandry department. The number of pigs in stock in 1981 was maintained at 50 million, a record high. Thirty-two million pigs were sold last year, 1.5 million more than the record year of 1980, of which 19.36 million were sold to the state, also the highest. The output of pork totalled 1.73 million tons, 92,500 tons over the year before. The output value of animal husbandry rose by 3.9 percent although 152,000 head of farm animals were killed and more than 820 farms were damaged during the flood. Sichuan improved the breed of more than 260,000 head of cattle and 710,000 sheep last year. It also opened about 7,000 hectares of pastureage. [Text] [OW231412 Beijing XINHUA in English 0755 GMT 21 Jan 82]

NATURE RESERVES--Chengdu, 9 Jan (XINHUA)--Sichuan Province plans to devote an additional 1 million hectares of land to that already set aside to protect forests, wildlife, water and land resources, according to the provincial forestry department. The recommendation was made after a 1-year survey by a group from the province's forestry departments. The existing 13 reserves, 480,000 hectares in all, were mainly on the periphery of the Sichuan basin, habitat of the giant panda. The new reserves will be dotted around the basin and will protect such rare species as the black-necked crane, the golden-haired monkey, the white-lipped deer and the takin. On the new list are also a number of beauty spots, including the stone forest and Karst caves in Xingwen County, mountain lakes in Songpan County and mountain glaciers. In drawing up the plan, Sichuan forestry officials also considered protection of rare tree species such as the silver fir, purplecone spruce and beech. [Text] [OW101341 Beijing XINHUA in English 0703 GMT 9 Jan 82]

CSO: 4020/97

BRIEFS

FARM OUTPUT--Lhasa, 31 Dec (XINHUA)--Despite serious natural disasters, Xizang Autonomous Region reaped a bumper harvest in both agriculture and animal husbandry this year. Though serious droughts affected 20 percent of the farmland and rainfall decreased by 20 to 30 percent over the past years, the total grain output of the whole region reached 950 million jin and the number of livestock increased by over 15 percent. Thanks to the implementation of various systems of responsibility in production and as a result of the bumper harvest, Xizang's peasants and herdsmen increased their income and improved their livelihood. The per-capita income is expected to increase by over 20 yuan over 1980. [OW101341 Beijing XINHUA Domestic Service in Chinese 1623 GMT 31 Dec 81]

PEASANTS BUILD HOUSES--Following the rural economic development and the constant increase of commune members' income, over past years, peasants in Xizang region have whipped an upsurge of building new houses. However, this has brought about a new problem, that is, some commune members have occupied arable land and private plots of the collective for the purpose of building new houses. This unhealthy trend of building houses at the expense of farmland must be curbed forthwith. To eliminate this unhealthy trend, we must do the following work: First, we must explain to the peasants that our arable land is in short supply and teach the cadres and the masses to treasure and value and to rationally utilize every inch of land; second, we must clearly explain to the masses that after the implementation of all forms of the production responsibility system, it remains unchanged for a long time that land is the fundamental means of production owned by the whole people; third, rural housing must be carried out in a unified and planned way; and fourth, we must do well in making law on the administration of land, and offenders, whoever they may be, must be strictly handled. [HK181512 Lhasa Xizang Regional Service in Mandarin 1130 GMT 15 Jan 82]

CSO: 4007/200

BRIEFS

CIRCULAR ON WATER--The Yunnan Provincial Economic Committee, the provincial planning committee and the provincial urban construction bureau recently issued a joint circular, demanding that all places and all departments strengthen management and use water sparingly to ensure sufficient water for the needs in industrial and agricultural production and in construction. Although this province's rainfall is higher than the national average rainfall, the greater part of this province's rainfall occurs during the rainy season and a fairly large portion of this rainfall flows from the highlands to lowlands and is not put to use. The water in the larger part of the dry areas is still in short supply, and it is in even shorter supply in urban areas. The circular demands that all places establish and perfect the management system in order to use water sparingly and in a planned way. [HK181512 Kunming Yunnan Provincial Service in Mandarin 1100 GMT 16 Jan 82]

CSO: 4007/200

ZHEJIANG

JIASHAN PREFECTURE ESTABLISHES SUPERIOR BREED HOG BASE

Hangzhou ZHEJIANG RIBAO in Chinese 9 Dec 81 p 1

[Article: "Hasten the Cultivation of Superior Local Breeds of Hog; Jiashan Establishes Jiaxing Black Hog Base"]

[Text] The work by Jiashan County to establish a Jiaxing black hog base for the superior local breed has produced visible results. The proportion of purebred sows of this county now leads other kinds of hogs in Jiaxing Prefecture.

Jiashan County is one of the major counties producing the famous Jiaxing black hog. The three black hogs that our nation sent France as a gift 2 years ago were selectively bred and provided by this county. This type of breeding hog, rated top quality by French experts, bears many piglets. Its mothering nature is good. The quality of pork is good and heterosis is obvious. Promoted by cooperative activities in scientific research in breeding the Taihu hogs from two provinces and one municipality, this county began to organize special forces to survey the situation of Jiaxing black hogs in 1975. Then it started work by establishing a base and mobilized each commune to conduct general surveys and evaluation every year using the collective livestock farms as the bases. County officials went to every pigpen to evaluate and select hogs, to register and make records, to assign numbers and to issue tags and description cards. They continued to eliminate the poor breeds and select superior breeds. In general, the whole county selectively bred 2,500 head of breed hogs each year. At the same time, in economic policy, priority was established for assistance. Each newborn of the pure breed was subsidized by 200 jin of food grains and 100 jin of locally produced chemical fertilizers. Each year, the whole county arranged 200,000 jin of food grains and 100,000 jin of chemical fertilizers for breeding, thus mobilizing the enthusiasm for popularizing selective breeding. Now, the whole county has 21,000 head of mature sows of the superior local breed, an increase of 6,000 head over 1975. The number of superior hogs has increased more than fivefold. As the number of purebred sows increased, economic hybridization of many combinations was developed and this effectively increased the percentage of births and the percentage of pork production, and it promoted the production of hog raising. During the past 2 years, the whole county has been feeding 600,000 head of live hogs each year, and it has been providing 310,000 head of commercial hogs to the state. Each farmer family feeds an average of 7.5 head of hogs each year.

During the course of grasping the construction of the base, this county also combined scientific research and production, continuing to explore the high-yielding characteristics of the superior local breeds and their quality so that selective breeding work gradually developed in the direction of selective breeding of strains. The best individuals were selected from among the producing colonies of 14 communes to form a base colony. On this basis, the hogs were screened and selected again and again through random breeding and repeated test crossing, and individuals with poor genes were continually eliminated. They also improved the composition of the feed and management of feeding and raising so that the good qualities of the selectively bred breeding hogs were developed and the poor qualities were eliminated. The best among the good were selected. After over 3 years of effort, the county not only established a foundation for breeding many generations, but it also provided many superior breed hogs to the whole county and other localities.

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CSO: 4007/159

PROVINCIAL LEADERS STRESS VEGETABLE, HOG PRODUCTION

Hangzhou ZHEJIANG RIBAO in Chinese 2 Dec 81 p 1

[Article: "The Party and Government Leaders of Each Locality Must Personally Oversee the Major Task of Truly Grasping Vegetables and Meat for the Masses Well; Chen Zuolin [7115 0155 7207] Represented the Provincial Committee and the Provincial People's Government at the Meeting of Chiefs of Financial Offices of the Whole Province, the Prefectures and the Municipalities and Made Concrete Proposals"]

[Text] All localities throughout the province must carry out the production and supply of vegetables and live hogs well as a major task. They must conscientiously strengthen leadership, take forceful measures, and concretely do a good job of arranging the people's needs for vegetables and meats. This was proposed by the secretary of the provincial committee and deputy governor, Chen Zuolin [7115 0155 7207], on behalf of the provincial committee and the provincial people's government at the meeting of chiefs of financial offices of the whole province's localities and municipalities held recently.

Chen Zuolin asked that the major responsible comrades of the party committee and the government of each city and key counties oversee the series of new situations and new problems that exist in the production and supply of vegetables in each city and town and to include the problems of vegetable supplies on the daily agenda of the party committee and government. The problems should be discussed at least four times a year in order to concretely implement various measures. Each city and key county must establish leading groups for vegetable management, to be headed by one deputy secretary; deputy mayor or deputy county manager and to be joined by leading comrades of all related departments of the agricultural committee, the planning committee, the capital construction committee, the scientific committee, the financial office, the department of agriculture, the commerce department, the food grains department, the supply and marketing department, the financial department, and the materials department. The groups should divide the work, cooperate and coordinate closely, and constantly grasp the work to solve existing problems in time. The problems of vegetable supplies must be solved well. The suburbs of cities must conscientiously implement the guideline of taking vegetables as the key; correctly arrange the relationship among industrial, sideline and vegetable production; and make sure that sufficient labor and capital are used in developing vegetable production. A sufficient area for planting vegetables must be assured. Where the area is not sufficient, it must be expanded in accordance with regulations. Vegetable companies must sign production and marketing contracts with vegetable producing communes and brigades. Procurement of food grains and other materials should be linked with vegetables on a trial basis. Mutual honesty must be maintained and strictly carried out, with rewards and compensation.

Chen Zuolin pointed out in his talk that pork is the major supplementary food of the people. To promote live hog production, the key is emphasis by the party committee and strengthening of leadership. The guideline of "continuing to encourage the individual commune member to raise hogs and to actively develop collective hog raising" must be thoroughly implemented. In making sound and perfecting the agricultural production responsibility system, the various economic policies which have been effective for many years in encouraging individual commune members to raise hogs must be implemented and firmly established. Key families and families that specialize in raising hogs must be actively popularized. Collective livestock farms must be continually managed well. Sows must be increased. Piglets must be propagated. The work of disease prevention and control must be done well. The agricultural departments, the banks, the commercial departments and the food grains departments must give active support in capital, feed and superior breeds. Combined feed must be actively developed. Each city and county must gradually distribute the live hog procurement task as handed down by the province to the production teams (including state-run farms) and to the families to promote live hog production and assure the state's procurement. Commerce departments must conscientiously improve procurement and marketing of live hogs so that during the prosperous season, procurement will not have to be limited or stopped and in ordinary times live hogs can be procured at any time. Efforts to make it convenient for farmers to sell hogs and to satisfy the need of the farmers to sell their hogs must be carried out. Market management must be strengthened. Procurement of live hogs by unlicensed slaughterers for reselling to turn a profit must be strictly prohibited. On the basis of grasping procurement during the prosperous season well, the market supply must be arranged well. In such arrangement, each locality must consider the overall situation and obey transfers to favor unified arrangement throughout the province.

The meeting also studied the problems of market supply for the 1 January holiday and spring holidays and asked that the supply of commercial products for the holidays be as ample as possible and more than past years to let the people in the cities and the villages have a good holiday.

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ZHEJIANG

BRIEFS

SILKWORM PRODUCTION INCREASE--The provincial sericulture production work conference announced good news: our province's silkworm cocoon production finally changed from a drop in yield to an increased yield, following this year's spring and summer drop in yield of over 80,000 dan. This was accomplished because the cadres and masses in the sericulture regions overcame their fear of difficulties, exerted untiring efforts and because the weather conditions were better. The whole year's production of cocoons reached over 1.309 million dan. Compared to 1980, the highest yield of cocoons since the founding of the nation, this was an increase of nearly 10,000 dan. After the yield of spring and summer silkworm cocoons had dropped, the leading departments at each level in the sericulture region grasped the production responsibility system, on the one hand, and scientific cultivation of silkworms on the other. The main measure to increase the yield was the popularization of a superior breed of silkworms. They increased the unit yield of every bed of silkworm stock and did the work of banking fertilizers in the summer mulberry gardens well. The area of mulberry gardens fertilized in summer throughout the province expanded from last year's 60 percent to over 80 percent. The work of controlling insects in the autumn mulberry gardens was also launched well, and this increased the amount of mulberry leaves. As a result, the drop in spring and summer cocoons was supplemented by autumn cocoons. The yield of silkworm cocoons in the mid-autumn silkworm season increased by 80,000 dan. The three counties of Chuanan, Lanxi, and Linghai produced over 10,000 dan of cocoons this year and joined the ranks of key cocoon producing counties. Thus, the number of counties and cities with an annual production of 10,000 dan of cocoons throughout the province reached 20. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 13 Dec 81 p 1] 9296

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TITLE: "Comparisons of Mongolian Cattle and Their Crossbreeds by Exotic Breeds in relation to Beef Production"

SOURCE: Harbin DONGBEI NONGYEYUAN XUEBAO [JOURNAL OF NORTHEAST AGRICULTURAL COLLEGE] in Chinese No 4, 30 Dec 81 pp 32-38

TEXT OF ENGLISH ABSTRACT: Seven groups, each with ten steers of Mongolian cattle (M), Chinese Black-White (BW), Charolais x BW, Simmental x Red-White, Limousin x M, Angus x M and Hereford x M, were used to compare beef productivity at 20-21 months of age raised under year-round grazing conditions. Liveweight adjusted to day 600 averaged 156.9, 211.7, 232.2, 228.2, 216.5, 203.8 and 199.0 kg respectively. All the crossbreeds and BW were significantly better than M in final liveweight and average daily gain, but differences between crossbred groups were not significant, being mainly determined by birthweight. Body measurements and slaughter characteristics were also studied. There was no significant correlation between withers height, heart girth or body length and slaughter results, but shank circumference was correlated with actual bone weight ($r = 0.80$, $p < 0.01$). Slaughter results indicated that L x M had the highest dressing percentage (49.05) and meat to carcass

[Continuation of DONGBEI NONGYEYUAN XUEBAO No 4, 30 Dec 81 pp 32-38]

ratio (70.20); with BW the poorest (44.28 and 66.68). Each group was again divided evenly into two subgroups; one was kept in the open with supplemental feeding (3 kg concentrates per head with hay to appetite); the other was kept under open grazing only for six weeks (5 Nov to 18 Dec). During this period daily gain for the fed lots averaged: 976, 890, 738, 629, 600, 552 and 333 g, respectively, for the C x BW, A x M, S x RW, L x M, BW, H x M and M; and -10, 190, 179, 86, 238, 233 and 333 g for the respective grazed lots. Two BW steers and one S x RW steer under grazing died. Therefore, all crossbreeds from dairy origin showed poorer adaptability than those from Mongolian cows, and all crossbreeds of improved breeds tended to demand good feed and rearing conditions.

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TITLE: "The Effects of Selenium Deficiency on Baby Chicks. I. Syndrome of Diets from Deficient Region"

SOURCE: Harbin DONGBEI NONGYEYUAN XUEBAO [JOURNAL OF NORTHEAST AGRICULTURAL COLLEGE] in Chinese No 4, 30 Dec 81 pp 55-63

TEXT OF ENGLISH ABSTRACT: Selenium and Vitamin E deficiency, a worldwide syndrome for many farm livestock, is also prevalent in Heilongjiang Province. No assay had been done on a synthetic approach to this disease.

To a basic diet (1) from Se deficient area Se (2), Vit E (3), Se + E (4) were added. A semisynthetic diet mainly of starch and yeast (5) and a stock diet (6) were used as negative and positive controls. During an experimental period of 10 weeks, all chicks from Lots 1, 3 and 5 were afflicted, of which mortalities averaged 76-80 percent. Disease manifestation and deaths occurred sporadically in Lots 2 and 4.

[Continuation of DONGBEI NONGYEYUAN XUEBAO No 4, 30 Dec 81 pp 55-63]

Visual symptoms, pathological changes and etiological patterns confirmed in general the natural Se-E deficient syndrome complex that occurred on farms. Selenium and/or Vit E supplementation to the deficient basic diet proved efficacious, thus confirming that Se and/or Vit E deficiency was the causative factor.

9717
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Agriculture Experimentation

AUTHOR: SHANG Guoqiang [1424 0948 1730]

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TITLE: "Preliminary Investigation of Goals and Pathways of Breeding Late Rice"

SOURCE: Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 12, Dec 81 pp 6-8, 16

ABSTRACT: An important technical reform in rice production occurred in the end of the 50's and the beginning of the 60's. With respect to late rice, late geng breeding replaced late xian ones to bring about a breakthrough in yield increase and a rapid expansion of dual season rice acreage. The typical late geng originating in the Taihu valley of Jiangxi, such as 10509, has a long growth period, however. Yigeng No 1, developed in the middle 60's matures about 10 days earlier but is not lodging resistant and cannot tolerate high fertilizer application. Since, 1969, the 105, 5108, 5025, etc. have been successively bred out to meet the new requirements of maturation time, fertilizer, disease resistance, and cold weather endurance. Concretely speaking, light sensitive geng breeds are prefered over temperature sensitive breeds and dwarf breeds over tall ones. In order to accomplish these goals, dwarf materials of early and intermediate xian varieties are ideal breeding stock. When hybrids of geng and xian are back crossed and double crossed with geng again, the offspings are 12.8-60.7 cm shorter than the parents. Techniques of breeding for complex resistance to diseases and pests, strong tillering ability, large and numerous spikes, and cold weather resistance in the late growing stage are also briefly discussed.

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TITLE: "Wheat Pollen Plant Male Sterile Line and Observation of Its Pollen Dysfunction Process"

SOURCE: Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 12, Dec 81 pp 9-10

ABSTRACT: Mutants have been frequently reported among wheat pollen plants obtained through anther induction but there has been no report of male sterile plants. In 1976, the authors obtained a male sterile plant from anther culture of intraspecific hybrid of common wheat cultivars. The haploid is naturally duplicated. During, inflorescence, the glumes stay open, the anthers are thin and shrivelled, and they cannot break open to scatter pollens. Under the microscope, normal pollens are observed inside the anthers, however. As a result of natural cross pollination, that plant did fruit and the grains are full and normal. The F_2 plants segregate into 7 types, and under natural pollination condition, the yield decreases with the height of the stalk. Two of the 7 types, when they are isolated with bags, do not fruit or there are only 3-4 grains in a spike. Further propagation ofthe 6 plants of the 2 types

[continuation of HUBEI NONGYE KEXUE No 12, 1981 pp 9-10]

has produced offsprings of 3 degrees of male sterility. The severest cannot fruit at all when the spike is covered with a paper bag, having only about 4 percent of the amount of normal pollens. The development of anther and pollen dysfunction is observed during the various stages of growth of all the generations of offsprings of the original male sterile plant of anther culture. Dysfunction occurs in different stages, from the pollen mother cell stage when a large quantity of pollen mother cells have no nucleus and only a small number of pollen mother cells have nucleus to the pollen ripening stage when many pollens are obviously small in volume, having no or very little starch accumulation, and turning black when they are stained with potassium iodide. In view of the fact that male sterility is observed in a portion of the offsprings of every generation, it is perhaps a hereditary characteristic, being the result of mutation in the process of formation of the anther plant in the induction-culture procedure.

AUTHOR: DENG Xiaoyu [6772 1420 3768]

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TITLE: "Preliminary Research on Soil and Crop Contamination From Phosphate Fertilizer Containing Fluorine"

SOURCE: Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 12, Dec 81 pp 18-20

ABSTRACT: A large quantity of fluorine-containing gas is discharged in the process of manufacturing calcium magnesium phosphate fertilizer to cause the air to contain 1.5ppm of HF in some cases. Some plants have adopted the technique of using CaO to precipitate the fluorine content in the exhaust in order to reduce fluorine pollution of the atmosphere. But, this process has caused the fluorine content of the product to increase. Some calcium magnesium phosphate fertilizer products contain more than 10 percent of fluoride. In 1978-80, studies are carried out to observe the effects of applying this high fluorine phosphate fertilizer on the growth of the crop plants, the yield, the distribution of fluorine in the plants, and the fluorine content of the crop plants and the soils. The fluorine content of the grains is found not to be obvious and they should be safe to eat. The fluorine content of the stubble is too high for it to be used as feed. When the fluorine content of the fertilizer is over 5 percent, the wheat and rice plants are observed to turn yellow but its effect on yield is not regularly observed.

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TITLE: "Research on Physiological Strain of Rice Blast Pathogen in Enshi Prefecture"

SOURCE: Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese
No 12, Dec 81 pp 20-25

ABSTRACT: The prefecture had traditionally been the nest of rice blast disease and extension of disease resistant breeds was made the major preventive and control measure. In the past decade or so, some resistant breeds continuously lose their resistance a few years after their introduction. Some research projects have demonstrated the existence of physiological strains in blast pathogens, and a change in the strain is the important reason for the loss of resistance, while a change in the cultivated breed will also affect the local composition of the strain system. Since 1979, the authors have used 7 national breeds and 3 local breeds to carry out an experiment of inoculation and identification to determine the local strains, their distribution, and their frequency of appearance. In view of the fact that a new breed will lose its resistance after 3-5 years of cultivation, the paper suggests that aside from a reasonable system of breed rotation, it is important to grade the resistance of a breed with the representative strains to clarify the strain or strains against which the breed is resistant before its extension in a given area. In this manner, the breeds may also be classified according to their inherited resistance to certain strains to build a foundation for analysis of resistant genes.

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Agricultural Research

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TITLE: "Changes in Major Characteristics of Summer and Autumn Planted Wheat and The Application in Crop Breeding"

SOURCE: Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 6, 10 Dec 81 pp 1-4

ABSTRACT: Winters in Fujian are warm and most wheat cultivars belong to the spring type, having no strict requirement of low temperature for vernalization. They grow very fast and are poor producers. For weak winter type, heading is often delayed and those of the winter type cannot develop a head without vernalization treatment. Beginning in 1973, experiments, some have continued for 7+ years, with summer and fall planting in alpine regions and fall planting in the plains of the province and with growing seeds in Heilongjiang Province in the spring, have produced some superior breeds. These experiments demonstrate that summer and fall planted wheat changes their characteristics considerably in the following aspects: (1) Growth and development period may be changed from 137-150 days to 70-90 days; (2) Height of stalk drops obviously to 2/3 or 3/4 of the original height if planted in the winter; (3) Changes in the characters of the spike are expressed in shorter and smaller spikes, fewer grains per spike, and a reduction of grain test weight. A portion of the paper is

[continuation of FUJIAN NONGYE KEJI No 6, 1981 pp 1-4]

devoted to discussions of important cultivation techniques in consideration of the above changes in characteristics. These techniques include selection of land, arrangement of crops before and after the wheat crop, reasonable arrangement of the planting time to guarantee ripening, heading, and blooming of a given cultivar and a given elevation, and proper management in accordance with the breed and the climate.

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TITLE: "Pathogenic Factors of Wheat Scab and Research on Resistance Breeding"

SOURCE: Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 6, 10 Dec 81 pp 5-7

ABSTRACT: In the inland mountains of northwestern Fujian, the heading and blooming time of wheat is the rainy season. There is frequent fog, the humidity is very high, and the temperature is rising. This is also the time of recurrent and severe incidence of scab. In the 8 years of 1973-80, 6 were severe years and 2 were moderated. In years of scab epidemic, 60-100 percent of wheat spikes are diseased to result in 30-40 percent reduction of yield. In severe cases, not a single wheat grain is harvested. In a moderate year, 20-40 percent of the spikes are affected by scab and the yield reduction is 10-20 percent. Since 1972, studies have been carried out by the authors to clarify the pathogenic factors and to breed scab resistant varieties. The paper summarizes the results to date in the following aspects: (1) The basic factor is the quantity of scab fungi on the rice stubble in the field; (2) The temperature, the humidity, the number of rainy days, and the amount of rain in the middle of Mar, i.e. the wheat blooming and starch filling stage, are factors closely related to the severeness of scab; (3) Of the 1,000+ breeds examined in the 8 years, not a single one was found to be immune to scab but susceptibility was found to

[continuation of FUJIAN NONGYE KEJI No 6, 1981 pp 5-7]

vary a great deal. Efforts in the search and utilization of source of resistance, in the observation of the relationship between lodging resistance and scab resistance, and in the identification of certain morphological characteristics indicative of scab resistance are reported.

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TITLE: "Research and Application of Forecasting the Occurrence of Brown Planthopper Feeding on Rice in the Late Rice Season"

SOURCE: Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 6, 10 Dec 81 pp 13-15, 12

ABSTRACT: Since the 70's, the prefecture has been frequently and severely hurt by brown planthoppers feeding on rice and the damage has been especially great to the late rice crops. In recent years, about 70 percent of the rice acreage is used for dual season rice cropping, and the harvest of the early rice in early-middle Jul is immediately followed by the transplanting of the late rice. In normal years, 3 generations of the planthoppers develop in the early rice paddies and 3-4 generations during the late rice season. In May-Jun and Jul-Aug, natural enemies (mainly spiders, etc.) provide relatively effective control but the control is lost after Sep when the density of the planthopper rises. As accurate forecasting is the essential condition for comprehensive prevention and control and forecasting accuracy involves a wide range of factors, such as the sources of pests, the weather, the cropping system, the rice breeds, the ecological environment, the natural enemies, the application of chemicals, etc. the paper concludes that the most urgent job at hand is to improve the accuracy of field survey, to introduce the concept of the life history of the pest, and to analyze and establish a mathematical model of the variation mechanism of the species groups.

AUTHOR: YANG Qinglang [2799 1987 3809]

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TITLE: "New Hybrid Combinations: Weiyou 244-3 and 244-6"

SOURCE: Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 6, 10 Dec 81 pp 16-19

ABSTRACT: Using IR24 as the material and radiation treatment, the Breeding Group of Fujian College of Agriculture has bred out sister restorer lines of Weiyou 244-3 and 244-6. Hybrid combinations of these two and the sterile line V20 have been tested in Jinjiang Prefecture for 2 years and have demonstrated such merits as early maturity, disease resistance, and high yield. Since the large acreage extension of hybrid rice in the prefecture in 1977, problems such as deterioration of disease resistance, mixing and degeneration of 3 parental lines, poor cultivation technique, improper management, etc. have caused the yield increase to be not obvious and the acreage of hybrid rice is decreasing in recent years. Special characteristics of Weiyou 244-3 and 244-6 make them suitable for the triple crop system and desirable during years of severe blast epidemics (such as 1981). The technique of seed preparation and important extension requirements of these hybrid groups are introduced.

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TITLE: "Characteristics of Early Xian Rice 77-175 and Its Cultivation Technique"

SOURCE: Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 6, 10 Dec 81 pp 19-20

ABSTRACT: The early xian 77-175 was bred out by the institute in 1974 using Hong410 as mother and Zhenzhuai as father. Test cultivation began in 1977. In the 3 years of multiple point tests in various counties of the prefecture, the yield appears to be similar to the control, Hong410, but its blast resistance is high, the rice grain of good quality, and the adaptability broad. In 1981, more than 20,000 mu were cropped, and a high yield was obtained from all. For the early season of 1982 333,000 mu are being planned in the prefecture, and Sanming Prefecture, Guangdong and Jiangxi Provinces have requested a large quantity of seeds of this new variety. Its cultivation technique, including suitable time for planting and transplanting, seedling cultivation measures, reasonable density, fertilizer application technique, scientific management of water, and measures for selecting and preserving of seeds, is introduced. Major characteristics of the variety are described.

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TITLE: "Potassium Deficiency of Rice and Its Prevention and Control"

SOURCE: Fuzhou FUJIAN NONGYE KEJI [FUJIAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 6, 10 Dec 81 pp 32-35, 29

ABSTRACT: In recent years, potassium deficient rice paddies are enlarging in Fujian Province and the condition is also increasingly severe. Potassium deficiency has become an important factor of preventing yield increase of rice in the mountains and the plains and in low yield and high yield paddies alike. Potassium is closely related to the carbohydrate metabolism of the rice plant and its deficiency has many consequences. Analyses of factors contributing to potassium deficiency of the soil are reported. Excessive application of nitrogen and dissolution of the potassium content of the straw by rain water after it is cut and before it is plowed back into the soil are among the important factors. The paper recommends adding potassium to the irrigation water, plowing back the stubble, applying ash fertilizer, potassium, and table salt, draining to improve soil ventilation, liming, etc.

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TITLE: "Research on Rotation of Grass and Cereal Crops for Low Yield Soils of the Northern Part of Liaoning"

SOURCE: Dalian LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 6, 15 Dec 81 pp 4-9

ABSTRACT: Tieling Prefecture of northern Liaoning has about 3 million mu of low yield soils. For the purpose of finding ways of improving and utilizing these soils, an experiment was conducted to rotate cereal crops with biennial white-flowered sweet clover. Several Systems of rotation and their effects were basically clarified. Since then (1974) the acreage of sweet clover has been extended to 200,000+ mu (1980). Forms of rotation include (1) Two years of clover rotated with one year of corn; (2) Two years of clover rotated with two years of grains without fallowing; (3) A clover-grain system rotated with an oil-grain system; (4) A clover-grain rotation system for soils of medium fertility. The yield increase results, the effects on the physical and chemical properties of the soils, and the effects on the microbiological properties of the soils of these crop rotation systems are reported. Concrete procedures of these systems are described.

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TITLE: "Research on the Technique of Applying Nitrogen Fertilizer for Geng Type Hybrid Rice"

SOURCE: Dalian LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 6, 15 Dec 81 pp 10-14

ABSTRACT: In 1977-80, small plots of 40-60 m^2 each were arranged in a Shenyang suburb and in Dawa County to (1) Compare nutrient absorption of hybrid rice with common rice; (2) Test the speed and the density of nitrogen absorption; (3) Determine the nitrogen requirement and nitrogen fertilizer utilization rate of the various stages of the growth and development period. The principle of nitrogen absorption of the hybrid was found to be similar but the total amount of its absorption perhaps higher. Optimal application of ammonium sulfate of 60-75 jin/mu at a ratio of 70:30 for early and late stages of growth is the conclusion of the study.

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TITLE: "Some Comments on The Classification of Chinese Sorghum Cultivars"

SOURCE: Dalian LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 6, 15 Dec 81 pp 18-22

ABSTRACT: The authors agree with Havlan and Dewet, 2 professors of the University of Illinois, that Snowden's classification of surghum cultivars of the world (1936) may be too complicated for practical use. Their simplified classification in 1972, which eliminates the Subseries Nervosa (or Chinese Kaoliang Group) and separates Chinese cultivars to be assigned to the bicolor and Kafir races is the result of a deficiency of specimens of Chinese cultivars, however. The authors maintain that the characteristic of having veins (nervosa) is a stable genetic characteristic and their fine and long grain description of the bicolor race in fact excludes Chinese bicolor cultivars. Based upon observation of 430 species of Chinese cultivars, the authors believe they should be regarded as an independent race within the subseries of Sorghum bicolor (Linn) Moench, and to be called S. bicolor ssb. bicolor Kaoliang race, which may be further divided into the 4 types of the soft hull, the hard hull, the double soft hull, and the Xinjiang. Relatively detailed morphological descriptions of several groups of the specimens examined by the authors are included.

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TITLE: "Technique of Mechanized Rice Seedling Culture in Trays Under a Large Tent"

SOURCE: Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 12, 17 Dec 81 pp 2-3

ABSTRACT: In 1980, the Heilongjiang Province introduced from Japan some rice machines and materials. On the basis of learning the Japanese technique of seedling culture and combining it with the production reality in Heilongjiang Province, the authors experimented with the technique of cultivating rice seedlings in trays under a large plastic tent. Seeding began on 10 Apr and completed on 19 Apr in 4,765 trays. The seedlings were transplanted on 20 May in 150 mu of rice paddies. The seedlings turned green very fast and tillered early. With reasonable management, the yield averaged 1,052 jin/mu, 350-450 jin/mu higher than a neighboring high yield brigade. The equipment, the structure of the tent, the process of disinfecting and preparing the soil, the method of sliding the trays under a machine to receive the seeds before entering another machine for steam bud forcing treatment, etc. are described. Twelve photos depicting 12 steps from constructing the supports of the tent to transplanting the seedlings are reproduced on the inside front cover of this issue.

AUTHOR: WANG Deshi [3769 1795 1597]

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TITLE: "How to Resolve the Problem of Purity of the Three Lines of Hybrid Rice"

SOURCE: Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 12, 17 Dec 81 pp 4-5

ABSTRACT: Factors contributing to impurity of the sterile line, the sterile-free line, and the restorer line and techniques to overcome these factors are discussed in separate sections of the paper. If the 3-lines of hybrid rice are to maintain a relatively high degree of purity, the purification work must be considered a regular project. A Prefecture 3-line Purification Cooperative Group was formed by representatives of the Prefecture Bureau of Agriculture, the Prefecture Institute of Agricultural Sciences, and Bureaus of Agriculture of the various counties. The Prefecture Bureau of Agriculture is to be responsible for resolving the problem of cost. The Prefecture Institute of Agricultural Sciences is to be responsible for the work of concrete technological guidance. The Cooperative Group is to proceed to purify the 3 lines of hybrid rice, including 2 sterile lines and 4 restorer lines, which are being extended over large areas in the prefecture and is to supply pure seeds within 2-3 years. And, from then on, it will provide each county with pure seeds of 3 lines, confirming to their respective standards.
6248
CSO: 4009/238

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TITLE: "Spring Wheat Breeding by Means of Irradiation in Combination With Cross-pollination"

SOURCE: Shijiazhuang YUANZINENG NONGYE YINGYONG [APPLICATION OF ATOMIC ENERGY IN AGRICULTURE] in Chinese No 4, 17 Dec 81 pp 15-21

ABSTRACT: Results of hybridization and mutation induction from $^{60}Co\gamma$ irradiation of seeds of hybrid spring wheat of F_0, F_1, and F_3 generations and irradiation of pollens of father are reported. Each of the first 3 methods is found to have some shortcomings, but in terms of improving the mutation induction efficiency, all 3 methods are found to be valuable. With respect to the method of irradiating pollens of the father, the sterility rate of F_0 is high, the fruits are very few, the F_2 group is very small and offers few choices. The utilization value of this, the 4th method, therefore, remains to be studied in the future. Experimental procedure and result of the 4 methods of irradiation are given in separate sections of the paper.
This paper was received for publication on 7 Jul 80.

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TITLE: "Studies on Radiosensitivity of Haploid Embryogenetic Cells Clone of Maize"

SOURCE: Shijiazhuang YUANZINENG NONGYE YINGYONG [APPLICATION OF ATOMIC ENERGY IN AGRICULTURE] in Chinese No 4, 17 Dec 81 pp 22-26

ABSTRACT: The material used in the experiment is an embryogenetic asexual line, obtained from anther culture of corn (Zea mays L.) in 1978, the B312 cell line, with the ability of evolvement and regeneration, and having done so for more than 24 generations in 2 years. At a temperature of 22-28°C and under scattered light, the B312 is cultured on a medium and when it is at the peak stage of growth (10-15 days) is irradiated with γ ray fast neutron of various doses. Results indicate that this cell line is extremely radiosensitive. The lethal dose and half-lethal dose are determined. Although irradiation of the culture medium does produce an indirect effect, the effect is smaller than that of direct irradiation of the cell.
This paper was received for publication on 21 Mar 81.

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TITLE: "Studies on the Safe Utilization of Chromium-contaminated Wastewater in Agriculture"

SOURCE: Shijiazhuang YUANZINENG NONGYE YINGYONG [APPLICATION OF ATOMIC ENERGY IN AGRICULTURE] in Chinese No 4, 17 Dec 81 pp 37-41, 21

ABSTRACT: To culture fluid or irrigation water, $K_2{}^{51}CrO_4$ is added to cause the ^{51}Cr content to be 0.028μCi/ml or the Cr^{+3} and Cr^{+6} density to be 0.1, 10, and 25 ppm to treat rice and wheat to study the chromium absorption, transfer, distribution, and accumulation in the rice and wheat plants, grains, and the soil. Another experiment with radioactive ^{51}Cr treated soil to study its absorption and transfer in common cabbage (Brassica chinensis L.) and watercress (Amaranthus sp.) reveals that the roots of these plants can absorb the chromium content of the soil and transfer to their above ground portions which serve as vegetables for men. Water lily [Pistia stratiotes Linn) is placed in jars of water containing either $^{51}Cr(OH)SO_4$ or $K_2{}^{51}CrO_4$ for 1,3,6,9,12,20, and 25 days to study densities of Cr^{+3} and Cr^{+6}, the concentration action of the plant, and the concentration factor.

[continuation of YUANZINENG NONGYE YINGYONG No 4, 1981 pp 37-41, 21]

This plant is found to be capable of concentrating chromium to the extent that in 25 days the Cr^{+3} density is 10-200 times higher and the Cr^{+6} density is 100-1000 times higher. On the one hand, the plant may be useful for purifying chromium-contaminated water; on the other hand if this plant is cultivated in water of mild chromium contamination and used to feed domestic animals, dangerous contamination of meat products can easily occur. In another experiment, silver carps (Hypophthaemichthys moditrix cuy eta) are raised in tanks of water containing $^{51}Cr(OH)SO_4$ or $K_2{}^{51}CrO_4$ in densities of 0.5 or 1.0 ppm for 1,3,7,14, and 21 days. The ^{51}Cr content of the various parts of the fish is determined. In the body of the fish, there is more accumulation of Cr^{+6} than Cr^{+3} and in the order of gill > scale > intestines > liver > spleen > bones > meat > heart.

This paper was received for publication on 2 Mar 81.

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TITLE: "Residual Status of Some Nitrification Inhibitors in Wheat and Soils"

SOURCE: Shijiazhuang YUANZINENG NONGYE YINGYONG [APPLICATION OF ATOMIC ENERGY IN AGRICULTURE] in Chinese No 4, 17 Dec 81 pp 53-58

ABSTRACT: Under certain conditions, when a type of nitrification inhibitors, such as 2-chloro-6-(trichloromethyl)pyridine, is applied to the soil, it acts to enhance the utilization rate of the nitrogenous fertilizer. This is a fact having been proven by practices. These inhibitors are also chemicals of a certain toxicity, however, and after entering the biosphere they will accumulate in foods to affect the health of men and animals. In 1976-79, the isotope tracer technique is used to study residues of 3 types of nitrification inhibitors and their degradation products in wheat and soil. Very little residue is found in wheat, only amounting to 1-3 percent of the original application and most of that is concentrated in the stubble and only 0.2-1.33 ppm remains in the flour. Most of the residues stay in the soil. The amount in the wheat plant is related to the characteristic of the soil. In soils of high organic matter and granule content, the residue in the wheat plant is lower and increases in inverse proportion.
This paper was received for publication on 26 Oct 80.
6248
CSO: 4009/246

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TITLE: "Ways to Increase the Yield of Upland Wheat"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 12, 20 Dec 81 pp 2-4

ABSTRACT: The major reasons for low and unstable yield of upland wheat are thin soil and water deficiency. The condition of the Xuechao Brigade of Wanrong County is just about the worst. The ground water table is more than 250m in depth and the annual rainfall is generally 300-700mm, concentrating in the 3 months of Jul, Aug, and Sep, not the growth and development season of winter wheat. The paper describes the local efforts of cultivating 2,000 mu of wheat and the success story of producing a stable yield of 300+ jin/mu in normal years and 200 jin/mu in years of drought. Discussions are divided into the following: (1) Early and deep plowing to preserve moisture; (2) Raising the planting density to 80-100 thousand spikes per mu may increase the yield from 100-200 jin/mu to 200-300 jin/mu, as the adverse natural conditions make it not feasible to try to obtain large spikes and grains; (3)Restoring the garden pea acreage of the 50's and the 60's and practicing the ancient system of rotating beans with wheat are measures adopted in addition to planting a sufficient acreage of alfalfa and increased application of phosphate fertilizer. (4) Most available wheat breeds have high water and fertilizer requirements and are not particularly suitable. The author hopes drought, freeze, and hot wind resistant wheat breeds will soon be made available by China's plant breeders.

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TITLE: "Influence of Precipitation on the Yield of Winter Wheat in Yuncheng Prefecture"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 12, 20 Dec 81 pp 4-7

ABSTRACT: In the 13 counties of Yuncheng Prefecture more than 5 million mu of winter wheat is cultivated each year. Precipitation appears to be the major reason of the large scale fluctuation of yield. Based upon the precipitation data of the 22 years of 1957-79 supplied by Yuncheng Prefecture Weather Station and the wheat yield information of 1950-79 supplied by the Yuncheng Prefecture Bureau of Statistics, the influence of precipitation of 26 ten-day periods from the middle Sep to the end of May of the following year is analyzed, using the regression integral method proposed by Fisher, R.A. Results indicate that the effect of rainfall distribution is greater than its quantity and rainfall in the middle Oct (the 3-leaf stage of wheat before overwintering) has the most beneficial effect. The paper suggests that aside from emphasizing basic moisture level, attention should be given to irrigation during the 3-leaf stage to supplement deficiency of rainfall in that period.

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TITLE: "Preliminary Research on Inheritability and Genetic Correlation of Major Characteristics of Spring Millet"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 12, 20 Dec 81 pp 8-11

ABSTRACT: The genetic principle of numerical characteristics of millet has not yet been frequently studied here and abroad. This paper reports a study carried out by the authors on 15 breeds which have regularly been used as parents at the institute. Data of such characteristics as tne number of days to heading, the number of days to ripening, the height of stalk, the weight of grains per stalk, the weight of stems, the grain test weight, the number of days in the growth and development period, etc. are gathered and the method of bio-statistical genetics is used to calculate the genetic parameters of these characteristics for the purpose of estimating their inheritability and hereditary progress, based upon direct selection of one characteristic at a time. The genetic variable used to compute inheritability, genetic correlation, etc. is obtained by using the method of variance analysis and such interference as the interaction of genes, the action of dominant characteristics, etc. is not excluded. The genetic progress is determined by the inheritability and the

[continuation of SHANXI NONGYE KEXUE No 12, 1981 pp 8-11]

genetic variable of the characteristic. When the inheritability is the same, the greater is the genetic variation the greater is the genetic progress. For example, the inheritability of the weight of grains/stalk is found to be 72.91 percent, the genetic variation coefficient is 21.41 percent, and the genetic progress is as high as 37.66-49.36 percent. The inheritability of the weight of 1000 grains is 93.25 percent, the genetic varation coefficient is 13.83, and the genetic progress is only 27.51-36.06 percent. This result indicates that the hereditary potential of the characteristic of the weight of grains/stalk is rather great. Selection on the basis of this characteristic during the early generations should possibly be effective.

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TITLE: "Research on General Resistance to Stripe Rust of Wheat and the Selection of Sources of Resistance"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 12, 20 Dec 81 pp 12-14

ABSTRACT: The work of many foreign scientists indicates that it is possible to use the general resistance of wheat to reduce the loss due to disease damage. General resistance involves controlling the number of invading pathogens, delaying the onset of disease occurrence, early ripening to avoid disease, and capability to tolerate disease. During the 70's physiological strains of stripe rust changed rapidly. In 1977, No 19 became the dominant strain replacing No 17; in 1979, Nos 23, 24, 25 appeared; and currently, Nos 23 and 24 have become the dominant ones, while the potential treat from 4 others is very great. The work of breeding resistant wheat varieties has become passive and difficult. This paper describes an experiment in 1978 to select a group of materials having general resistance to serve as sources of resistance (parents) for future breeding work, using the technique of artificial inoculation. The reaction type, the infection rate, and the severity are recorded. Based upon results of the experiment, 23 breeds, including 20 introduced from foreign countries,are recommended as sources of general resistance.

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TITLE: "Intercropping Wheat and Tobacco"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 12, 20 Dec 81 pp 29-30

ABSTRACT: The tobacco of Daixian is famous for its excellent flavor while most of it is produced in Ekou and Xingao, amounting to 500-600 thousand jin per year, 80-90 percent of the total tobacco production of Daixian County. Ekou and Xingao suffer from land shortage, however. The arable land in these 2 places is only 1.1 mu and 2.3 mu per person respectively. For the purpose of resolving the problem, an experiment was conducted in 1974-76 to intercrop spring wheat with tobacco. Large area demonstration of the intercroping system began in 1977. The system has been extended throughout the region in 1978-80. Plastic thin film is used to cultivate tobacco seedlings to be transplanted into wheat fields so as to prolong the growth and development period to guarantee the quality of the tobacco. In one form of the system tobacco is considered the primary crop; in another form the wheat and the tobacco crops are equally emphasized. The latter is suitable only when the condition of water and fertilizer is very good. In either form, the period when wheat and tobacco are in the field together is only about 40 days and mostly in the starch filling stage of the wheat. The system does require more labor and appears to change the original ecological environment, however. The number of such pests as wheat aphids, root-cutting worms, and army worms has been obviously much greater than before the intercropping system was introduced.

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CSO: 4009/228

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TITLE: "The Pathogens of Some Virus Diseases of Cereals in China. X. Estimation of the Percentage of Viruliferous Planthoppers Transmitting Wheat Rosette Stunt Disease by the Enzyme Linked Immunosorbent Assay"

SOURCE: Shanghai SHENGWU HUAXUE YU SHENGWU WULI XUEBAO [ACTA BIOCHEMICA ET BIOPHYSICA SINICA] in Chinese No 4, Sep 81 pp 417-422

TEXT OF ENGLISH ABSTRACT: The percentage of active individuals in a population of the planthopper (*Laodelphax striatellus* Fallen) transmitting the wheat rosette stunt disease was estimated by the enzyme-linked immunosorbent assay (ELISA). The enzyme employed was alkaline phosphatase which was coupled with the aid of glutaraldehyde to the γ-globulin fraction of the antiserum to a purified preparation of the nucleocapsid and its fragmentation products derived from the rhabdovirus.

[Continuation of SHENGWU HUAXUE YU SHENGWU WULI XUEBAO No 4, Sep 81 pp 417-422]

The coincidence between ELISA and biological assay on 191 planthoppers was around 86 percent. The possibility of raising further the sensitivity and the potential of field application was discussed.

9717
CSO: 4009/225

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TITLE: "Structure and Function of Chloroplast Membrane. V. Ultrastructural Biogenesis of Chloroplasts from Different Ploids of Wheat"

SOURCE: Beijing ZHIWU XUEBAO [ACTA BOTANICA SINICA] in Chinese No 6, Nov 81 pp 441-446

TEXT OF ENGLISH ABSTRACT: Based on our previous studies of the ultrastructure and constituents of chloroplast membrane in relation to the function of photosystem II, and the effects of intermittent light and cations toward the ultrastructure and the absorption spectrum and function of photosystem II of wheat chloroplast membranes. Then we studied the ultrastructure of the chloroplast membrane in different ploids of wheat during their biogenesis.

Seedlings of diploid wheat (*Tr. monococcum*), tetraploid wheat (*Tr. durum* Desf), hexaploid wheat, "Nongda 139" (*Tr. aestivum*) and octoploid wheat (*Triticale* Hungarian) were grown in the dark for 7 days and exposed to light (1500 lux) for

[Continuation of ZHIWU XUEBAO No 6, Nov 81 pp 441-446]

greening at a temperature of about 26°C. Samples were taken after exposing to light for 1 hr, 3 hrs, 4 hrs and 22 hrs for ultrastructural observation of the biogenesis of chloroplasts. We found that the chloroplastid membranes of different ploids of wheat appeared to have a similar stepwise biogenesis process. We also found that the development rate and degree of constitution and form of their membranes were distinctly different. Especially, it was remarkable and interesting that we found numerous "vesicles" in different sizes and number within the stroma of the proplastid of the diploid, tetraploid and octoploid wheat after exposing to one hour and four hours of light. In so doing, gemma-like bodies appeared from the outer envelope membrane from the yellow proplastid of tetraploid and octoploid wheat. These bodies looked quite like the photosynthetic membranes of prokaryote. It is worth noting that this unusual ultrastructure has not been reported before. We wonder if the gemma-like bodies are possibly another form of chloroplast reproduction. How can this phenomenon be explained? Why were these bodies found only in tetraploid and octoploid wheat? What are the controlling factors? These processes need future study.

9717
CSO: 4009/224

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TITLE: "Screening for Resistant Varieties of Rice to Brown Planthopper (Nilaparvata lugens Stål"

SOURCE: Beijing KUNCHONG ZHISHI [ENTOMOLOGICAL KNOWLEDGE] in Chinese No 6, Nov 81 pp 247-250

ABSTRACT: For the purpose of selecting brown planthopper resistant varieties and parent materials suitable for the natural condition of Hunan Province, 531 foreign, domestic, and local lines and cultivars are examined in outdoor plots and in indoor pots to determine their antibiosis and tolerance. Of these, 11 are finally picked. One of these, Nongken-58, a local late geng, is then used as the control to compare the yield; the 10 variaties (lines) all perform better than the control. All 10 are breeds (lines) selected and bred by the International Rice Institute located in the Philippines. The method and procedure of this study, carried out in 1977-78, are reported, the results are described in some detail.

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TITLE: "Preliminary Study of Hibernating Insect Source of Brown Planthopper (Nilaparvata lugens Stål)"

SOURCE: Beijing KUNCHONG ZHISHI [ENTOMOLOGICAL KNOWLEDGE] in Chinese No 6, Nov 81 pp 273-276

ABSTRACT: On the basis of previous work, in Jan 79 and in Jun 81, the author and colleagues of the station gathered more than 20 jin of weeds of different species for investigation and feeding observation to clarify the local source of overwintering brown planthoppers. Results proved that brown planthoppers, in the form of eggs, are capable of overwintering in the core of the stem and in the tender sheath of the weed, leersia hexandra Sw. which can be found locally on the damp leeward banks of ditches, ponds, and fields, to establish the effective source of brown planthoppers which damage early and late rice crops in Changsha County as well as the entire province of Hunan. In Changsha County or in Hunan Province, brown planthoppers, in the forms of nymph or imago, are found to be incapable of overwintering on any host plant.
6248
CSO: 4009/237

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TITLE: "Breeding of Bailin No 1 and No 2"

SOURCE: Beijing LINYE KEJI TONGXUN [FOREST SCIENCE AND TECHNOLOGY] in Chinese No 10, 10 Oct 81 pp 1-4

ABSTRACT: Bailin No 1 and No 2 are superior stalks bred out in 1964 through hybridization of the natural hybrid No 24 (Poplus babylonica x P. balsamifera) x black poplar of Altai Mountains and black poplar x P. balsamifera respectively. Selection was completed in 1970, certification in 1971-74. In the fall of 1979 and spring of 1980, a survey was carried out to compare the 5-8 year olds of these 2 breeds with the control. Bailin No 1 was found to grow faster in arid and thin soils as well as sandy soils of good moisture condition. The speed of growth of Bailin No 2 was found to be close to that of black poplar but obviously faster in plain and bay areas of better moisture and nutrient conditions. Morphological, ecological, and disease and pest resistance phenomena of these 2 breeds are described. Under good environmental conditions, Bailin No 2 performs much better than Bailin No 1. The former does not grow as well as the latter under the condition of aridity and thin soil, however. Some photos are included depicting the 2 breeds and their bark.

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CSO: 4009/227

Meteorology

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TITLE: "Discussions on Recent Droughts in Sanjiang Plain"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 12, 10 Dec 81

ABSTRACT: Sanjiang Plain of Heilongjiang Province is one of China's important bases of commercial grain production and has a normal climate favorable for the growth of corn, soybean, and rice. The continuous drought in 1975-79 brought some new problems to the agricultural production of that region, however. With respect to the reason for the prolonged drought, there are 3 types of viewpoints: (1) As a result of atmospheric circulation anomaly; (2) Under the condition of circulatory change, the destruction of the cushioning surface aggravates the severity of the drought; (3) The effect of the destruction of the cushioning surface is very obvious. Survey and analysis of a large quantity of data by the author and colleagues revealed the fact that historically, with respect to Heilongjiang or Sanjiang Plain, drought and flood occur alternately. In Sanjiang-Plain, 1952-65, 1971-74 are periods of floods and 1966-70, 1975-79 periods of drought. When the record of rainfall of Sanjiang Plain since the beginning of its large scale development in 1956-60 and that of Harbin which is not in Sanjiang Plain are compared, there is no indication of any great change caused by changes of the cushioning surface in various places of the Sanjiang Plain. But, this is not to say that the reduction of forest coverage, draining of marshes, and destruction of grassland have not changed the ecology greatly and intensified wind and water erosion. Rainfall data of various historical periods are given.

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ORG: North China Cold Calamity Research Cooperative Group

TITLE: "Research on the Cold Calamity for Grain Crop in Northeast China"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 12, 10 Dec 81
pp 20-22

ABSTRACT: In the past 3 decades, the fluctuation of yield of commercial grains in the Northeast is becoming greater and greater. In the 50's, the yield varies in a range of several billion jin. Since the 60's, the yield reduction of some years (1969, 1972) was more than 10 billion jin. Years of experiments and research have confirmed that the major cause is cold calamity due to low temperature. Although cold damage to crops is related to periodic changes of temperature, more importantly it is due to a failure to arrange crops and breeds reasonably on the basis of the local climatic resources. This paper describes the various types of cold calamity for crops, the frequency and the principle of its appearance, and possible measures to protect crops from cold calamities.

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Plant Protection

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TITLE: "Studies on the Biotype of the Brown Planthopper in China"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 4, Dec 81 pp 217-226

TEXT OF ENGLISH ABSTRACT: The present study was a part of "the brown planthopper [*Nilaparvata lugens* (Stal)] collaborative project" sponsored by the International Rice Research Institute. In order to determine the biotype of the brown planthopper (BPH) occurring in different regions of China, the responses of different rice varieties to BPH, survival rate of the nymph, population buildup and honey dew excreted by the insect were studied.

The rice varieties with different resistant genes used for the test were the following:

Gene	Variety
Bph1	Mudgo, IR26
bph2	IR42, ASD7, H105
Bph3	Rathu Heenati
bph4	Babawee
two unidentified genes	Ptb21, Ptb33, Sinna Sivappu, Sudu Hondarawala
None	TN1

[Continuation of ZHIWU BAOHU XUEBAO No 4, Dec 81 pp 217-226]

The results of the study are as follows:

1. The BPH collected from different localities in China, including nine provinces (Guangdong, Guanxi, Fujian, Zhejiang, Hubei, Hunan, Guizhou, Anhui and Jiangxi), were found to infest the TN1 variety seriously, but Mudgo, IR26, ASD7, Rathu Heenati, Babawee, Ptb21, Ptb33, Sudu Hondarawala and Sinna Sivappu lightly.
2. The survival rate of the BPH nymph on the TN1 variety was significantly greater than that on the resistant varieties with different resistant genes. On TN1 it was found to have the largest population and have better BPH development than on the resistant ones.
3. The population buildup of BPH on the TN1 variety was significantly higher than that on the resistant ones.
4. The area (mm^2) of honey dew response by ninhydrin on the TN1 variety was greater than that on the resistant varieties. The honey dew excreted by BPH feeding on the TN1 was found to be the heaviest.

According to the results of the present study, it is shown that the BPH collected from different regions in China belong to biotype 1.

In the present paper, a discussion of rice breeding strategies for preventing the appearance of a new biotype of BPH is also given.

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TITLE: "The Production and Application of the Nuclear Polyhedrosis Virus of *Heliothis armigera* armigera (Hubner) in Biological Control"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 4, Dec 81 pp 235-240

TEXT OF ENGLISH ABSTRACT: The present paper reports a production technique for the nuclear polyhedrosis virus (NPV) of *H. armigera* and its effectiveness against the population of *H. armigera* in cotton fields. The larvae of *H. armigera* were used for NPV production.

Subsequent to the egg inoculation, the larvae were individually reared on an artificial diet in small bottles. Preoral infection of the fourth instar larvae was performed by contamination on the diet surface. Infected larvae were then collected after six days. Their mortality was found to be 80-85 percent and individual larvae produced 4-6 x 10^9 PIB. A combination of NPV with bait, formulated from

[Continuation of ZHIWU BAOHU XUEBAO No 4, Dec 81 pp 235-240]

cottonseed cake powder and crude cottonseed oil, etc., and a low dosage of carbaryl enhanced significantly the controlling effect against *H. armigera*. Field tests in 1976-1979 for the control of *H. armigera* showed that the effectiveness of the NPV insecticide was equivalent to or superior to that of standard chemical insecticides. Large scale field tests on cotton with low volume spray of the NPV insecticide from a plane were conducted in 1979 and effective control of *H. armigera* had been obtained.

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TITLE: "Studies on the Economic Threshold of the Asiatic Corn Borer [*Ostrinia furnacalis* (Guence)] in the Cotton Field"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 4, Dec 81 pp 241-247

TEXT OF ENGLISH ABSTRACT: In the vicinity of Shanghai, the damage to cotton caused by the Asiatic Corn Borer has been increasing during recent years and in many places has surpassed that of the pink boll worm, the major pest of cotton in the Shanghai area. For the efficient use of chemical control, it is necessary to estimate the yield loss due to its damage and establish its economic threshold.

These experiments were conducted during 1977~1979, including establishing the relationship between the number of egg masses per 100 plants and the number of damaged plants per 100 plants, determining the yield loss of damaged plants and the compensatory effect of the normal plants immediately surrounding the damaged plant.

According to the experimental data, the economic thresholds for the first, second and third generations were calculated to be 2.2 - 2.8, 0.9 - 1.1 and 3.1 egg masses

[Continuation of ZHIWU BAOHU XUEBAO No 4, Dec 81 pp 241-247]

per 100 plants respectively. The suggested economic thresholds were verified during the growing season at six different places in 1979 by field experiments and the results showed that these economic thresholds were acceptable.

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TITLE: "Studies of *Xanthomonas translucens* f. sp. *undulosa* in Wheat"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 4, Dec 81 pp 249-254

TEXT OF ENGLISH ABSTRACT: A leaf-strip disease occurs on wheat in the wheat growing region of Taian Prefecture, Shandong Province, and Gansu Province. The causal organism of this disease has been identified as a form of *Xanthomonas translucens* f. sp. *undulosa* (Smith et al.) Hagborg.

The disease shows translucent and water-soaked spots on the infected leaves which become yellow, then darker with black stripes. Bacteria ooze appeared on the infected surface as many tiny drops and later as yellow beads.

The morphological and physiological characteristics of the pathogen are described as follows: Rods, 0.4~0.8 x 1.0~2.5 μ, single, occasionally in pairs but not in chains, no spores and capsules, motile by a single polar flagellum; gram negative; beef-pepton agar colonies wax yellow, circular, smooth, entire, convex and very viscid; filiform on agar slant; turbidity in beef-broth with pellicle on surface;

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acid but no gas from glucose, sucrose, lactose, galactose, fructose, xylose, mannose; no acid from maltose, inulin, rhamnose, salicin; starch not hydrolyzed; gelatin liquefied; nitrates not reduced to nitrites; hydrogen sulphid and ammonia produced; no indole, milk coagulated and peptonized, and reaction of litmus slightly alkaline.

Inoculation studies with the bacterial isolates from leaf-stripe disease of wheat infected barley and rye, producing water-soaked streaks with bacterial exudates on leaf surface; but did not infect oats. Twenty varieties or cultivars of wheat seedlings are all susceptible to this organism.

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TITLE: "Further Studies on the Principles of Root-zone Application of Systemic Insecticides"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 4, Dec 81 pp 275-284

TEXT OF ENGLISH ABSTRACT: This paper gives the results of further experiments on the effectiveness of carbofuran, chlorodimeform, padan, dimehypo and thiocylam hydrogen oxalate ("Evisect") on the yellow stem borer (*Scirpophaga incertulas*), the rice gall midge (*Orseolia oryzae*), the rice thrip (*Baliathrips biformis*), the rice leaf folder (*Cnapholocrosis medinalis*) and the brown planthopper (*Nilaparvata lugens*). The oficidal action of carbofuran on the brown planthopper was also studied. Preliminary experiments on anti-feeding and systemic properties of the neem (*Azadirachta indica*) and other species of the family Meliaceae (including *Melia toosendan* and *M. azedarach*) have been carried out. Results indicate that the oil from the seeds of these plants possesses strong anti-feeding effect on the newly-hatched larvae of the yellow stem borer and nymphs of the brown planthopper. The

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oil also possesses strong repellent effects on the females of the rice gall midge.

Altogether there are 10 different methods of root-zone or soil application of systemic insecticides as practiced in south China. The application of systemic insecticides in admixture with nitrogenous fertilizers before transplanting seems to be a promising method for the early varieties of rice. In 1980, the technique of root-zone application of systemic insecticides has been tested and demonstrated successfully in about 100,000 mu (6600 ha) of rice fields in Hubei, Jiangxi, Guangdong and other provinces of south China. Results of these experiments show that root-zone application of insecticides is less hazardous to the parasites and predators in the rice environment than when they are applied as foliar sprays, particularly to the spiders which are potent natural enemies of the brown planthopper. Hopefully the research on the method of root-zone application will throw some light in developing a new integrated pest control strategy (IPM) for rice insect pests.

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TITLE: "Economic Benefits of the Triple Cropping System of Two Crops of Rice and One Crop of Rape in Relation to Soil Fertility"

SOURCE: Shenyang TURANG TONGBAO [JOURNAL OF SOIL SCIENCE] in Chinese No 6, 5 Dec 82 pp 1-4

ABSTRACT: Utilizing the natural advantages of light, heat, and water of the south to expand the crop repeating index is an important way of raising the yield but its effect on soil fertility is increasingly being noticed. This paper reports an experiment carried out in the Quaternary red colored clay (red earth) of the institute, in 0.1 mu plots of different levels of fertilizer application and cropping arrangements. When rape is compared with Chinese milk vetch [Astragalus sinicus] as the winter crop following 2 crops of rice, under conditions of high, medium, or low fertilizer application, the yield was found to be 7.1-35.6 percent per mu per year higher with rape, but generally speaking the accumulation of organic matter and nutrients of the soil is higher with vetch. The authors conclude that the best solution is to seed vetch between rows of rape as a winter crop. The rape yield is slightly lower but the amount of work is not increased, the total yield for the year is the highest, and it is the best system for improving soil fertility.

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TITLE: "Ameliorative Effect of Phosphatic Fertilizer on Shallow Mud Paddy Soil"

SOURCE: Shenyang TURANG TONGBAO [JOURNAL OF SOIL SCIENCE] in Chinese No 6, 5 Dec 82 pp 8-11

ABSTRACT: According to statistics, there are about 1.37 million mu of shallow mud paddies in Fujian Province. The physical and chemical properties of this type of soil are not suitable for the growth of rice plants. Its phosphorus content is generally about 5 ppm and becomes even less when ditches are dug to drain the paddy and improve its water and heat conditions. Following analyses of the Ca-P, Fe-P, Al-P, and Ca-Fe-Al P phenomena, an experiment was carried out in plots of 0.25 mu to test various systems of phosphorus treatment after the drainage improvement measure. All systems are found to produce obvious effects of improving the physical and chemical properties of the soil and the best result is produced by an application of 100 jin/mu of lime followed by 50 jin/mu of calcium perphosphate. Details of the experiment are reported.

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TITLE: "Research on Reasonable Distribution of Potassium Fertilizer in a Rotated Triple Cropping System"

SOURCE: Shenyang TURANG TONGBAO [JOURNAL OF SOIL SCIENCE] in Chinese No 6, 5 Dec 82 pp 13-15, 31

ABSTRACT: The yield increase effect of potassium fertilizer in Guangdong Province has been reported and confirmed by production practices in many different places of the province. A 2-year experiment was conducted by the authors (1979-80) to clarify the most beneficial way of applying it in terms of the major triple cropping system of the province which is rice, rice, and wheat or rice, rice, and green manure (rotating wheat with green manure for the winter crop.) Based upon the results of the experiment, the authors believe that if potassium fertilizer supply is plentiful, the amount should be evenly distribut to guarantee a stable yield of all 3 crops of the year. If potassium fertilizer is in short supply, the late rice crop should be emphasized. If there is no need of considering the quantity, an equal amount should be distributed for each of the 3 crops, with an extra portion added to the late rice crop to obtain the best yield increase action from potassium fertilizer.

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TITLE: "Manganese Content of Soils of the Loessial Region and Effects of Manganese Fertilizer"

SOURCE: Shenyang TURANG TONGBAO [JOURNAL OF SOIL SCIENCE] in Chinese No 6, 5 Dec 82 pp 16-20

ABSTRACT: Analyses of major soils of the loessial plateau disclose their manganese contents to vary at 116-740 ppm, increasing from the north to the south. With a mean of 536 ppm, the manganese content of soils of the entire region is slightly lower than the mean of the whole country, which is 710 ppm and that of the world (850 ppm.) Factors influencing the distribution of manganese, including the soil parent material, the soil calcium carbonate and pH, the soil organic matter, the soil ventilation, and the heat and moisture condition are extensively discussed. Effects of manganese fertilizer is found to vary with the crop and the type of soil. Preliminary observation indicates that 100 ppm of easily reduced manganese may be considered as the critical manganese deficiency value and for wheat, corn, millet, etc. application of manganese fertilizer is an effective measure to increase the yield in some areas of the loessial plateau.

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